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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,255	10/26/2005	Josuke Nakata	F-8836	6247

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EXAMINER	
NEGRON, ISMAEL	

ART UNIT	PAPER NUMBER
2885	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,255	NAKATA ET AL.	
	Examiner	Art Unit	
	Ismael Negron	2885	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13-16* is/are rejected.

7)☒ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s), Item 3: Information Disclosure Statements filed on 10/5/2005, 7/17/2006, 11/14/2006, 1/3/2007, and 1/16/2007

DETAILED ACTION

Title

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: ~~Self-~~Light Emitting Device **with Spherical Photoelectric Converting Element**.

Abstract

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus the abstract should include the technical disclosure of the improvement. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;

(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. The abstract of the disclosure is objected to because it refers to purported merits of the claimed invention. Correction is required. See MPEP § 608.01(b).

3. The Examiner respectfully suggests amending the abstract as follows:

A self light-emitting device ~~1 has spherical~~**including** photo-electric converting elements ~~2 that have~~**having** a substantially spherical acceptance surface~~, respectively~~; a light emitting diode ~~3 that emits light using electric power generated~~**powered** by the spherical photo-electric converting elements ~~2~~; a control circuit ~~5~~; and a sealing member ~~4~~ that integrates the spherical photo-electric converting elements ~~2~~, the light emitting diode ~~3~~ and the control circuit ~~5~~. The control circuit ~~5~~ is equipped with a light emitting control circuit ~~where~~**including** a photo-detecting sensor ~~23 is incorporated~~, a charge control circuit and a condenser. ~~Since the acceptance surface of the spherical photo-electric converting elements 2 is substantially spherical, electric power is generated due to incidental light from any angle. Since the sealing member 4 integrates the constructional elements, so the device is difficult to damage.~~

Specification

4. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is strongly suggested. The substitute specification filed must be accompanied by a statement that it contains no new matter.

Claim Objections

5. Claims 1-16 are objected to because of the following informalities: they are written in overly verbose language. Appropriate correction is strongly suggested.

6. As an example, the Examiner respectfully suggests amending Claim 1 as follows:

CLAIM 1. A ~~self-~~light-emitting device~~, wherein, the self-light-emitting device comprises~~**comprising:**

a ~~spherical-~~photo-electric converting element having a substantially spherical light receiving surface;

a lens member ~~that guides or condenses~~**for guiding or condensing** light to said ~~spherical-~~photo-electric converting element; a luminous body ~~that emit light using an electric power generated by said spherical~~**for emitting light and powered by said** photo-electric converting element; and a sealing member **for enclosing the light emitting device into an integral unit**~~embedding above described whole elements integrally~~.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 1-5, 7-10 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over DUNBAR (U.S. Pat. 5,231,781) in view of ISHIKAWA (U.S. Pat. 6,355,873).

8. DUNBAR discloses an illumination device having:

- **a photo-electric converting element (as recited in Claim 1)**, Figure 2, reference number 7;
- **a lens member (as recited in Claim 1)**, Figure 1, reference number 2;
- **the lens member guiding or condensing light to the spherical photo-electric converting element (as recited in Claim 1)**, column 11-16;
- **a luminous body that emits light (as recited in Claim 1)**, Figure 1, reference number 8;
- **the luminous body being powered by the photo-electric converting element (as recited in Claim 1)**, column 3, lines 22-29;

- **a sealing member (as recited in Claim 1)**, column 3, lines 2-4;
- **the sealing member embedding the elements integrally (as recited in Claim 1)**, as evidenced by column 3, lines 4-11;
- **a plurality of photo-electric converting elements connected in series (as recited in Claim 2)**, column 3, lines 22-25;
- **a condenser for accumulating the electric power generated by the photo-electric converting elements (as recited in Claim 3)**, Figure 1, reference number 9;
- **a light emitting control circuit (as recited in Claim 4)**, Figure 1, reference number 10;
- **the light emitting control circuit being for controlling a conduction of electric power to the luminous body (as recited in Claim 4)**, column 4, lines 3-9;
- **a photo-detecting sensor (as recited in Claim 5)**, as evidenced by column 3, lines 43-48;
- **the sensor being incorporated into said light emitting control circuit (as recited in Claim 5)**, column 3, lines 43-48;
- **a charge control circuit (as recited in Claim 7)**, Figure 1, reference number 10;
- **the charge control circuit being for controlling charge provided to the condenser (as recited in Claim 7)**, column 3, lines 43-48;

- **the lens member and the sealing member being formed with the same type of synthetic resin material (as recited in Claim 8)**, column 3, lines 2-9;
- **a reflection member (as recited in Claim 15)**, Figure 1, reference number 6;
- **the reflection member being formed from a transparent resin material where light could be reflected (as recited in Claim 15)**, column 3, lines 2-5; and
- **the reflection member being provided adjacent the photo-electric converting element and the luminous body (as recited in Claim 15)**, as seen in Figure 1.

9. DUNBAR discloses all the limitations of the claims, except:

- the photo-electric converting element having a substantially spherical light receiving surface (as recited in Claim 1);
- a partial-spherical metallic reflection member (as recited in Claim 9);
- the reflection member being for reflecting incidental light to a lower surface side of the photo-electric converting elements (as recited in Claim 9); or
- the reflection member being made from a lead frame (as recited in Claim 10).

10. ISHIKAWA discloses an illumination device having:

- **a photo-electric converting element (as recited in Claim 1)**, Figure 6, reference number 50;
- **the photo-electric converting element having a substantially spherical light receiving surface (as recited in Claim 1)**, as seen in Figure 6;
- **a partial-spherical metallic reflection member (as recited in Claim 9)**, Figure 6, reference number 220;
- **the reflection member reflecting incidental light to a lower surface side of the photo-electric converting elements (as recited in Claim 9)**, column 5, lines 16-18; and
- **the reflection member being made from a lead frame (as recited in Claim 10)**, column 4, lines 64-67.

11. It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the photoelectric converting elements of illumination device of DUNBAR with the patented spherical photoelectric converting elements of ISHIKAWA. One would have being motivated to provide the device of DUNBAR with an extremely efficient photoelectric converting element capable of receiving light at many different incident angles, as per the teachings of ISHIKAWA.

12. **Claims 6 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over DUNBAR (U.S. Pat. 5,231,781) in view of ISHIKAWA (U.S. Pat. 6,355,873).

13. The teachings of DUNBAR and ISHIKAWA disclose individually, or suggest when combined, all the limitations of the claims (as detailed in previous sections 8-11), except:

- an astable multivibrator including two transistors and multiple resistors (as recited in Claim 6);
- one end of the photo-detecting sensor being connected to an earth and the other end being connected to a base of one of the transistors (as recited in Claim 6);
- the resistors connected to the bases of the two transistors having much greater resistance values compared to those of the resistors connected to the collectors of the transistors (as recited in Claim 6); or
- a schmitt trigger inverter and a resistor connected in parallel for blinking the luminous body (as recited in Claim 13).

14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the claimed circuit configuration in the device of DUNBAR and ISHIKAWA, since the applicant has not disclosed that such specific configuration solves any problem or is for a particular reason. Selecting one circuit configuration would have flown naturally to one of ordinary skill in the art as necessitated by the

particular requirements of a specific application, as implied by DUNBAR's general disclosure of specific circuit arrangements.

15. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over DUNBAR (U.S. Pat. 5,231,781) in view of ISHIKAWA (U.S. Pat. 6,355,873), as applied to Claim 3 above, further in view of LEBER et al. (U.S. Pat. 4,704,535).

16. The teachings of DUNBAR and ISHIKAWA disclose individually, or suggest when combined, all the limitations of the claims (as detailed in previous sections 8-11), except photo-detecting sensor is made from an ultraviolet sensor, and a direct-current amplifying circuit to amplify a voltage according to the intensity of ultraviolet rays detected by said ultraviolet sensor and transmit the amplified voltage is provided in said light emitting control circuit (as recited in Claim 11).

17. LEBER et al. discloses a direct-current amplifying circuit to amplify a voltage according to the intensity of ultraviolet rays detected by said ultraviolet sensor and transmit the amplified voltage is provided in said light emitting control circuit (as evidenced by Figure 5).

18. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of DUNBAR and ISHIKAWA with those of LEBER et al., to obtain a self-powered device capable of indicating when exposure to the sun becomes excessive, as per the teachings of LEBER et al.

19. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over DUNBAR (U.S. Pat. 5,231,781) in view of ISHIKAWA (U.S. Pat. 6,355,873), as applied to Claim 3 above, further in view of O'CONNOR (U.S. Pat. 5,793,184).

20. The teachings of DUNBAR and ISHIKAWA disclose individually, or suggest when combined, all the limitations of the claims (as detailed in previous sections 8-11), except the condenser being a manganese dioxide-lithium secondary battery (as recited in Claim 14).

21. O'CONNOR discloses a solar power supply unit including a manganese dioxide-lithium secondary battery (column 5, lines 6-8).

22. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the manganese dioxide-lithium secondary battery of O'CONNOR in the device of DUNBAR and ISHIKAWA, to provide such device with a rechargeable battery that could stabilize the output voltage even at small levels of current and that could be recharge a large number of times without degrading the total capacity of the battery, as per the teachings of O'CONNOR (see column 5, lines 3-10).

23. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over DUNBAR (U.S. Pat. 5,231,781) in view of ISHIKAWA (U.S. Pat. 6,355,873), as applied to Claim 3 above, further in view of SCHWARTZ (U.S. Pat. 4,343,032).

24. The teachings of DUNBAR and ISHIKAWA disclose individually, or suggest when combined, all the limitations of the claims (as detailed in previous sections 8-11), except the photo-detecting sensor is formed from cadmium sulfide (as recited in Claim 16).

25. SCHWARTZ discloses a light sensitive illumination device including a photo-detecting sensor is formed from cadmium sulfide (column 2, lines 12-14).

26. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use cadmium sulfide photo-detecting sensor of SCHWARTZ in the device of DUNBAR and ISHIKAWA, since the Examiner takes Official Notice that such photo-detecting sensor are old and well known in the art. One would have been motivated to use such specific sensor as necessitated by the specific requirements of the circuit arrangement desired for a given application.

Relevant Prior Art

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bender (U.S. Pat. 3,844,840), **Humble et al.** (U.S. Pat. 5,036,443), **Chu** (U.S. Pat. 5,453,729), **Cha** (U.S. Pat. 5,680,033), **Green et al.** (U.S. Pat. 5,782,552), **Mitzel**

et al. (U.S. Pat. 6,402,338) and **Shih** (U.S. Pat. 7,044,616) disclose illumination devices including solar cells, light sources and light sensor to control activation of the light source.

Ralph (U.S. Pat. 3,025,335), **Levine et al.** (U.S. Pat. 5,419,782), **Sugawara et al.** (U.S. Pat. 6,563,041) and **Nakata** (U.S. Pat. App. Pub. 2004/0238833) disclose photoelectric conversion panels having spherical photovoltaic members.

Tulenko et al. (U.S. Pat. 4,229,733), **Pearson** (U.S. Pat. 4,851,686), **Bianco et al.** (U.S. Pat. 4,985,632) and **Black et al.** (U.S. Pat. 5,382,986) disclose ultraviolet detection devices including photoelectric conversion members.

Allowable Subject Matter

28. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

29. The following is a statement of reasons for the indication of allowable subject matter:

Applicant teaches an illumination device including a plurality of spherical photoelectric conversion elements, a lens member for guiding of concentrating light to the conversion elements, a condenser for accumulating power from the conversion elements, a plurality of light sources powered by the conversion elements, an ultraviolet light sensor for controlling illumination of the light sources, and a sealing member

integrating the illumination device into a single unit. A control circuit is also included for energizing either of the plurality of light sources based on the output of the ultraviolet light sensor.

30. No prior art was found teaching individually, or suggesting in combination, all of the features of the applicants' invention, specifically a control circuit for energizing either of a plurality of light sources based on the output of a ultraviolet light sensor, in combination with the recited structural limitations of the claimed illumination device.

Conclusion

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ismael Negron whose telephone number is (571) 272-2376. The examiner can normally be reached on Monday-Friday from 9:00 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee, can be reached on (571) 272-7044. The facsimile machine number for the Art Group is (571) 273-8300.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications maybe obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, go to http://pair-direct.uspto.gov. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) toll-free at 866-217-9197.

/Ismael Negron/
Patent Examiner
AU 2885